

No.

9400265



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

USDA-ARCS Aberdeen Plant Materials Center

Whereas, THERE HAS BEEN PRESENTED TO THE

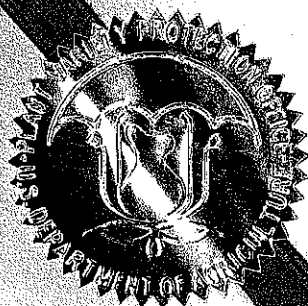
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEATGRASS, INTERMEDIATE

'Rush'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-fourth day of April, in the year of our Lord two thousand one.

Attest:

Alan K. Post

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service


Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(INSTRUCTIONS ON REVERSE)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) USDA-SCS Aberdeen Plant Materials Center		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. PI 575702	3. VARIETY NAME Rush
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) P.O. Box 296 Aberdeen, ID 83210-0296		5. PHONE (include area code) (208) 397-4133	FOR OFFICIAL USE ONLY PVPO NUMBER 9400265 FILED Date Aug. 1, 1994 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. FILING Filing and Examination Fee: \$ 2325.00 Date Aug. 1, 1994 Certificate Fee: \$ Date
6. GENUS AND SPECIES NAME Elytrigia intermedia	7. FAMILY NAME (Botanical) Poaceae		
8. CROP KIND NAME (Common Name) Intermediate Wheatgrass	9. DATE OF DETERMINATION 4/90		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) U.S. Government			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Gary Young
USDA-Soil Conservation Service
P.O. Box 296
Aberdeen, ID 83210-0296

PHONE (include area code): (208) 397-4133

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety
- b. ☒ Exhibit B, Novelty Statement
- c. ☒ Exhibit C, Objective Description of Variety
- d. ☐ Exhibit D, Additional Description of Variety
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership
- f. ☒ Seed Sample (2,500-viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
- g. ☒ Filing and Examination Fee (\$2,325) made payable to "Treasurer of the United States"

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act) ☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

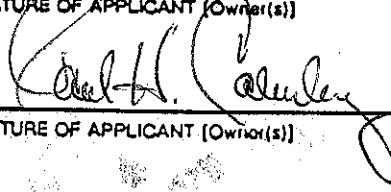
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? ☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____) ☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? ☒ YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) **U.S. 1/14/94** ☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE State Conservationist	DATE 8/16/94
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

A. ORIGIN AND BREEDING HISTORY (Revised)

'Rush' (PI 575702) *Elytrigia intermedia* (Host) Nevski, was selected from very broad germplasm (PI 281863) which has been in the US since 1962. This germplasm was entered into the PI system as *Agropyron junceum* (L.) Beauv. The source was the German Botanical Garden, Berlin.

Through several cycles, Rush was selected for numerous, broad leaves, superior seedling emergence, (emerging 3 to 5 days earlier and in greater numbers), uniform performance and consistent rhizomatous form compared to the original broad-based PI 281863 germplasm. Final selection cycles for Breeder material were made vegetatively.

Rush has been observed to be stable and uniform over five generations since 1988. The variants which have been found in Rush include glaucous leaves (approximately 5 percent) and non-rhizomatous plants (less than 5 percent). Under irrigated conditions approximately 30 percent of Rush plants exhibit wide basal leaves ranging from 17 - 20 mm.

B. NOVELTY STATEMENT for 'Rush' Intermediate Wheatgrass (Revised)

The most similar existing variety to Rush intermediate wheatgrass is 'Oahe'. Oahe was selected at South Dakota Agricultural Experiment Station, Brookings and was released in 1961. Oahe was selected from a Russian introduction identified as PI 98568. Oahe, a four-clone synthetic, was developed from two cycles of selection for high seedset, forage, yield, and rust resistance within a population of high-seed-producing plants. It is described as being uniformly blue green, vigorous, rhizomatous, drought tolerant, winter hardy, and produces high yields of large seed (Grass Varieties in the United States, Agriculture Handbook No. 170, Soil Conservation Service, revised November, 1994).

Table 1 is a comparison of morphological characteristics of Rush and Oahe intermediate wheatgrass. Characteristics were measured during the 1996 growing season at two separate locations, The Curlew Test Site and the Aberdeen Plant Materials Center Display Nursery, both located in southeastern Idaho.

Rush is similar to Oahe in terms of stem diameter, flag leaf width and length, leaf width below flag leaf, stem exsertion and flowering date. Rush and Oahe are also similar in color (5GY/5, Munsell Color Chart for Plant Tissues), however Oahe is uniformly glaucous while Rush exhibits the glaucous characteristic in approximately five percent of the plants. Rush is also similar to Oahe in terms of drought tolerance, vigor and winter hardiness.

The differentiating characters between Rush and Oahe are basal diameter, plant height and seed weight. Rush produces a significantly larger basal diameter as compared to Oahe and Rush is a significantly taller plant than Oahe. These characteristics were significantly different at both locations. Rush also has larger seed than Oahe as shown on Table 1.

Table 1. Morphological Comparison of 'Rush' and 'Oahe' Intermediate Wheatgrass

CURLEW TEST SITE ^{1/}PMC DISPLAY NURSERY ^{2/}

CHARACTER		RUSH	OAHE	COMPUTED ^{3/}		RUSH	OAHE	COMPUTED ^{3/}	
		T _(0.01)				T _(0.01)			
Basal Diameter (cm)	\bar{x} =	10.4	6.8	5.83	\bar{x} =	12.5	9.4	6.01	
	s=	2.5	2.2		s=	1.7	2.3		
Plant Height (cm)	\bar{x} =	61.9	49.3	5.66	\bar{x} =	105.3	94.8	3.34	
	s=	9.5	7.6		s=	9.2	14.4		
Stem Diameter (mm)	\bar{x} =	2.8	2.5	2.18	\bar{x} =	2.7	3.0	1.49	
	s=	0.6	0.6		s=	0.7	0.7		
Flag Leaf Width (mm)	\bar{x} =	5.8	5.5	0.84	\bar{x} =	7.0	8.5	2.81	
	s=	1.5	1.2		s=	1.9	2.2		
Flag Leaf Length (cm)	\bar{x} =	16.0	13.0	2.49	\bar{x} =	14.3	13.7	0.43	
	s=	5.4	3.8		s=	5.0	5.7		
Leaf Width below Flag Leaf (cm)	\bar{x} =	5.6	5.2	0.96	\bar{x} =	5.4	5.6	0.47	
	s=	1.8	1.7		s=	1.9	1.3		
Seed Head Width (mm)	\bar{x} =	5.1	4.8	1.27	\bar{x} =	5.4	6.2	3.53	
	s=	1.0	1.2		s=	0.7	0.9		
Seed Head Length (cm)	\bar{x} =	15.7	14.0	1.93	\bar{x} =	20.1	23.6	3.24	
	s=	3.5	3.3		s=	3.0	5.0		
#Seed Heads per Plant	\bar{x} =	16.0	9.7	2.67	\bar{x} =	35.5	28.2	2.03	
	s=	9.8	8.4		s=	14.7	13.3		
Stem Exertion Flag Leaf to Base of Seed Head)(cm)	\bar{x} =	12.7	11.4	0.92	\bar{x} =	39.6	40.7	0.66	
	s=	5.7	5.2		s=	5.4	7.4		
Leaf Color		5GY/5 Approx. 5% glaucous	5GY/5 100% glaucous		5GY/5 to 7.5 GY/5 approx. 5% glaucous		5GY/5 100% glaucous	(Munsell Color Chart for Plant Tissues).	
Approximate Flowering Date		Jul-10	Jul-10		Jul-1		Jul-1		
1000 Seed Weight ^{4/} (g)					6.87		5.01		

^{1/} The Curlew test site is a dryland plant testing site located approximately 70 miles southeast of Aberdeen, Idaho. Average annual precipitation is 12-16 inches.

^{2/} The PMC Display Nursery is located at the Aberdeen, Idaho Plant Materials Center Farm. These plots are irrigated to achieve the equivalent of 12-16 inches annual precipitation.

^{3/} The T-test was used to compare Rush and Oahe. Thirty individual plants from each cultivar were evaluated at each testing site during the 1996 growing season. Degrees of Freedom (d.f.) = 58, level of significance = 0.01. Tabular $T_{(0.01)} = 2.66$. Computed T values in **bold** indicate plant characters which are significantly different between Rush and Oahe.

^{4/} 1000 seed weight data from Natural Resources Conservation Service Technical Guide, section IV Standards and Specifications.

C. OBJECTIVE DESCRIPTION OF VARIETY

'RUSH' INTERMEDIATE WHEATGRASS
(*ELYTRIGIA INTERMEDIA* (Host) Nevski)

Name of Applicant: USDA-Soil Conservation Service

Temporary Designation: NA

Plant Introduction Number: PI-575702

Variety Name: Rush

1. SPECIES: *Elytrigia intermedia*, synonyms include *Thinopyrum intermedium*, and *Elymus hispidus*. Former name, no longer accepted, is *Agropyron intermedium*.
2. CYTOLOGY: Allohexaploid, $2n=42$, S and X genomes for Triticeae tribe of the Poaceae family.
3. ADAPTATION: USDA-SCS Major Land Resource Areas; A3, A5, B6, B8-10, B13, D21, D22, D25, D28a, and E43-51, where rainfall exceeds 12 inches. Under irrigation, it will grow in all A, B, D, and E regions. It is probably adapted to many areas across the northern tier of states and southern Canada.
4. MATURITY: Anthesis is approximately the same as other intermediate wheatgrasses in southern Idaho. Seed maturity is 5-10 days later than Tegmar, Greenar, and Greenleaf.
5. PLANT HEIGHT: Average height of mature culm: 140 cm. Range 110-170 cm. Approximately 10 cm taller than Greenar or Greenleaf.
6. GROWTH HABIT: Erect, densely tillered, leaves basal and on culms, somewhat lax.
7. RHIZOMES: Moderately rhizomatous, 1-3 dm per year.
8. LEAF BLADE:
 - Color: Blue-green
 - Glaucous: Yes, variable
 - Glabrous: No
 - Length: 30 - 40 cm
 - Width: 10 - 17 mm
9. LEAF SHEATH:
 - Auricles: Very small, 1.0 mm
 - Ligule: Short, 0.5 - 1.0 mm, square, minutely toothed
10. INFLORESCENCE: Spike, narrow and erect, spikelets diverging slightly at maturity, 15 - 25 cm long
11. LEMMA:
 - Length: 10 - 12 mm
 - Width: 2 mm
 - Awn length: 1 - 2 mm
12. SEED: 7.5 g/ 1000 seeds

E. STATEMENT OF THE BASIS OF THE APPLICANTS OWNERSHIP

The variety for which PVP is being requested was developed by the staff of the U.S. Dept. of Agriculture, Soil Conservation Service, Plant Materials Center in Aberdeen Idaho. The leaders in this development were Gary Young, PMC Mgr, J. Chris Hoag, and Loren St John, PMC Asst Mgrs. As US government employees, these persons retain no ownership rights to this variety. All rights to this variety are held by and remain with the U.S. Dept. of Agriculture, Soil Conservation Service.

